IN THE CLAIMS:

This listing of the claims replaces all prior versions and listings of the claims. Please cancel claims 5, 15, 21, 25 and 29 and amend claims 13 and 17 as follows:

Claim 1. (previously presented) An image transform method, for transforming original input image data into image data expanded by a ratio represented by a rational number or an integer, comprising the steps of:

reducing correlation in the vertical and horizontal directions of an image that is linearly expanded in the vertical and horizontal directions to generate first expanded image data by a rank order processing in a window having a predetermined size wherein a target pixel and its neighboring pixels in the linearly expanded image data are included;

performing linear interpolation, based on correlation with a target pixel constituting said original image data and neighboring pixels arranged in oblique directions, using said neighboring pixels to generate second expanded image data by determining an interpolation direction, wherein the neighboring pixels comprise a first neighboring pixel and a second neighboring pixel, and wherein determining an interpolation direction comprises:

calculating a left oblique difference using the target pixel and the first neighboring pixel;

calculating a right oblique difference using the target pixel and the second neighboring pixel;

determining the left oblique direction to be the interpolation direction when the left oblique difference is smaller than a threshold value and when the right oblique difference is greater than a threshold value; and

determining the right oblique direction to be the interpolation direction when the left oblique difference is greater than a threshold value and when the right oblique difference is smaller than a threshold value; and

employing said first expanded image data and said second expanded image data in an arithmetic combination to generate a final image.

Claims 2-5 (canceled)

Claim 6. (previously presented) An image transform method, for transforming original input image data into image data expanded by a ratio represented by a rational number or an integer, comprising the steps of:

forming an image by linearly expanding original image data in the vertical and horizontal directions; and

reducing the vertical and horizontal directional correlation of said image through a rank order processing to generate a final expanded image;

determining, for said expanded image, whether the contrast in said original image data can be maintained at a predetermined level; and

extracting a high frequency component from said expanded image, when said contrast can not be maintained at said predetermined level, and adding said frequency component multiplied by a constant to said expanded image, or subtracting said frequency component multiplied by a constant from said expanded image.

Claims 7-9. (canceled)

Claim 10. (previously presented) An image processing apparatus comprising:

input means for entering original image data to be expanded;

vertical and horizontal directional interpolation means for interpolating said original image data in the vertical and horizontal directions;

vertical and horizontal directional correlation reduction means for reducing correlation of the obtained image in the vertical and horizontal directions;

oblique direction detection means for detecting an oblique direction having a strong correlation with a target pixel and neighboring pixels in said original image data, wherein the neighboring pixels comprise a first neighboring pixel and a second neighboring pixel, and wherein detecting an oblique direction comprises:

calculating a left oblique difference using the target pixel and the first neighboring pixel;

calculating a right oblique difference using the target pixel and the second neighboring pixel;

detecting the left oblique direction to be the oblique direction when the left oblique difference is smaller than a threshold value and when the right oblique difference is greater than a threshold value; and

detecting the right oblique direction to be the oblique direction when the left oblique difference is greater than a threshold value and when the right oblique difference is smaller than a threshold value; and

directional interpolation means for employing said neighboring pixels in said detected oblique direction to perform interpolation in said oblique direction.

Claim 11. (original) The image processing apparatus according to claim 10, further comprising:

generation means for generating expanded image data based on an image obtained by said vertical and horizontal directional correlation reduction means and an image obtained by said oblique directional interpolation means.

Claim 12. (original) The image processing apparatus according to claim 11, further comprising:

input means for entering, as an adjustment value, the personal preference of a user concerning image quality,

wherein said generation means employs said adjustment value to synthesize said image obtained by said vertical and horizontal directional correlation reduction means with said image obtained by said oblique directional interpolation means.

Claim 13. (currently amended) The image processing apparatus according to claim 10, wherein said vertical and horizontal directional correlation reduction means performs ~~the~~ a ranked median value selection, for the target pixel and its neighboring pixels in the

linearly expanded image data, and thereby reduces the correlation of an image in the vertical and horizontal direction.

Claims 14-15. (canceled)

Claim 16. (previously presented) An image processing apparatus for transforming original input image data into expanded image data comprising:

an interpolation direction determination unit for reading a target pixel and neighboring pixels in original image data, and for determining an interpolation direction, wherein the neighboring pixels comprise a first neighboring pixel and a second neighboring pixel, and wherein determining an interpolation direction comprises:

calculating a left oblique difference using the target pixel and the first neighboring pixel;

calculating a right oblique difference using the target pixel and the second neighboring pixel;

detecting the left oblique direction to be the interpolation direction when the left oblique difference is smaller than a threshold value and when the right oblique difference is greater than a threshold value; and

detecting the right oblique direction to be the interpolation direction when the left oblique difference is greater than a threshold value and when the right oblique difference is smaller than a threshold value; and

an oblique directional linear interpolation unit for performing linear interpolation for said target pixel by using said neighboring pixels arranged in said determined interpolation direction.

Claim 17. (currently amended) The image processing apparatus according to claim 16, wherein <u>determining the interpolation direction further comprises:</u>

<u>reading pixels in a mask around a point;</u>

<u>calculating a left cumulative value by summing pixel difference values for the left oblique direction;</u>

<u>calculating a right cumulative value by summing pixel difference values for the right oblique direction;</u>

determining the vertical and horizontal directions to be interpolation directions when the absolute value of the left cumulative value minus the right cumulative value is smaller than a threshold value;

determining the left oblique direction to be the interpolation direction when the absolute value of the left cumulative value minus the right cumulative value is greater than a threshold value and when the left cumulative value is greater than the right cumulative value; and

determining the right oblique direction to be the interpolation direction when the absolute value of the left cumulative value minus the right cumulative value is greater than a threshold value and when the left cumulative value is smaller than the right cumulative value.

~~said interpolation direction determination unit reads peripheral pixels arranged within a predetermined mask range adjacent to said target pixel and/or said neighbor pixels and adds together the differences between said peripheral pixels and said target pixel and said neighbor pixels, and determines said interpolation direction based on the cumulative value of said differences.~~

Claims 18-19. (canceled)

Claim 20. (previously presented) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing image transformation, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1.

Claims 21-23. (canceled)

Claim 24. (original) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for image transformation, said method steps comprising the steps of claim 1.

Claims 25-27. (canceled)

Claim 28. (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embedded therein for causing image processing, the computer

readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the steps of claim 10.

Claim 29. (canceled)

Claim 30. (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embedded therein for causing image processing, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the steps of claim 16.

Claims 31-33. (canceled)